

which exceeds the maxillæ in length. On the dorsal plates of the thorax and abdomen the clothing is as follows :—The posterior hairs, which are much longer, are distributed in regular rows, and the anterior hairs, which are of smaller size, are scattered without any particular order. A similar distribution is to be observed upon the ventral plates of the ninth segment. On the other ventral plates the little hairs show no particular arrangement, and the ventral plates of the second segment are quite without hairs. The superior extremities of the pleuræ of the meso- and metathorax, as also the wing-like scales, are clothed with hairs, arranged upon the pleuræ in two, upon the scales in three rows. Further, the unpigmented cuticle of the abdomen is covered with transversely arranged rows of the smallest possible hairs. The coxæ of the first pair of legs are covered with hairs only in front, as also the coxæ of the other legs. The trochanter, the femur, the tibiæ, and the tarsus have their whole surface covered with little hairs. Much larger hairs are to be noticed at the anterior lower angle of the coxæ and trochanter in each leg. The femora have at their hinder angles two curved setæ. In the distribution of the spines upon the tibiæ and tarsi no deviations are to be remarked.—*Zoologischer Anzeiger*, February 9, 1885, p. 75.

Completion of the History of Chaitophorus aceris, Fabricius.

By M. J. LICHTENSTEIN.

In the 'Comptes Rendus' of the 17th June, 1867, MM. Balbiani and Signoret gave the history of the brown Aphis of the maple. These observers traced only half the biological evolution of the insect; M. Ritzema of Leyden, and Mr. Buckton in England, have added some details to those furnished by the French naturalists; and I can now give the complete series of the curious métamorphoses of this animal.

The ova of *Chaitophorus aceris*, concealed during the winter beneath the buds or in the fissures of the bark of the maple (here *Acer monspessulanum*, Linn.), are hatched in the early days of March: they furnish an apterous false female or *pseudogyne*, which, without concourse with the male sex, and after four moults at six days' intervals, or in from twenty to twenty-five days, brings forth some young Aphides, a portion of which acquire wings, and which spread for longer or shorter distances, according to their powers of locomotion, over the maples of the neighbourhood. This second phase, to which I have given the name of the *emigrant pseudogyne*, is agamic like that which preceded it, undergoes, like it, four changes of skin, and produces not only two, but three different forms of Aphides—one like itself, the second furnished with long hairs, and the third adorned with leaflets around its periphery.

All this has been told by MM. Balbiani and Signoret, at least in part, for it is especially to these latter forms that they paid attention. They say that they could not trace them further, and inquire

what may be the significance of these abnormal individuals of *Aphis aceris* deprived of the faculty of reproduction.

Applying to these insects my theory of the biological evolution of the Aphides, this third phase must also be a *pseudogyne*, and by following it patiently I could not but succeed in obtaining sexual individuals. This has been the case, but not so quickly as I expected.

At first the Aphides, which resembled their progenitor, increased in size normally; in twenty days they produced broods of embryos furnished with long hairs, exactly like those which I had obtained in the preceding brood. The forms with leaflets, observed by the entomologists of Paris and the north, were wanting here at Montpellier, upon the maple that I observed. But after the end of May or the first days of June, all the normal forms had disappeared, and I had left only embryos collected in groups upon the leaves, as figured by Réaumur in the third volume of his 'Mémoires.'

June, July, and August passed without my nurselings increasing in size or moving; at the beginning of September the leaves began to fall, which became troublesome in the pursuit of my observations. Fortunately I observed that when the fallen leaf ceased to furnish them with nourishment, my little animals were well able to quit it and seek their fortune elsewhere. I profited by this observation to transfer these embryos from a yellow to a green leaf, fastening with a pin the withered leaf to the fresh one. In a few hours all my Aphides were attached to the latter.

By this means I had the pleasure, on the 12th September, of seeing the skin of these hairy embryos split and again furnish me with an *Aphis* of normal form and of a uniform light yellow colour, which grew very quickly, and began, in the first days of October, to produce young of different dimensions. Smaller and more elongated than any of their predecessors, these insects, which were at first green, but afterwards became blackish brown, ran over the branches of the maple, and showed that I had before me the two sexes, for the copulations were frequent, the same male evidently fecundating several females.

But this is not all. Pushing polymorphism to the extreme point, I saw among numerous apterous males some which were winged, and just as we have seen the second phase composed of *emigrant pseudogynes* partly winged and partly apterous, we witness here a production of apterous males to fecundate the females upon the same tree, and of winged males which can go to a distance in search of females which have fallen down or the wind has carried away.

Soon after copulation the female deposits her ova under the buds or in the fissures of the bark of the maples; they are at first light yellow, but soon become bright shining black. These are the ova which hatch in the spring and furnish the *foundress pseudogyne* of the colony.—*Comptes Rendus*, November 10, 1884, p. 819.

Urnatella gracilis.

Prof. Leidy remarked that Mr. E. Potts had given to him, in